**Stata Homework -Determinants of crime rates in the USA**

The assignment asks to analyse measures of crime rates across various districts in the USA.

There are 5 different tasks you should perform:

1. Prepare your do-file and import the data into Stata

2. Inspect the data

3. Estimate the model of the determinants of crime rates

4. Perform specification tests

5. Interpret the results

The data can be in the Excel file "assignment.xls", where the first row consists of variable names.

You should write **a short report** (up to 2000 words) and submit it with the **do-file and log-file**

as an appendix to the document.

**Part 1: Prepare your do-file and import the data into Stata**

1. At the beginning of the do-file, include your name and your student number.

2. Set up your directory in which you stored the Excel file containing the data.

3. Start the log file named ’assignment’.

**Part 2: Inspect the data**

1. Label the variables according to the sheet ’Description’ in the original Excel file. Are your

labels stored correctly?

2. Check summary statistics for your variables. What is the sample size? What is the mean

crime rate?

3. You want to analyse the determinants of the crime rates in the USA. Create and save 2 scatter

plots that will help you decide which independent variables to include in the model. Check if

the variable crmrte is normal. Save that graph.

**Part 3: Estimate the model of the determinants of crime rates**

1. Run a regression of the crime rate on the probability of arrest, the probability of conviction

and the number of police officers per capita. 2. Interpret the economic and statistical significance

of these variables. 3. Set the confidence intervals to 90% level. Interpret the new confidence

intervals. 3. Is the model successful in explaining the variation of variable crime rate? Do you

have reason to believe there is omitted variable bias present? (hint: discuss a statistic provided

by Stata and perform the overall significance test)

**Part 4: Perform specification tests**

1. Extend the model from part 3.1 to include the rest of the explanatory variables (except variable minority). Perform an F-test to decide whether new variables add significant explanatory

power to the model.

2. Does police per capita have non-linear relationship with crime rates? Add the variable which

would show that non-linear relationship in the model from 4.1.

3. Instead of variable percent minority, include dummy variable minority. How would you interpret the marginal effect on crime rates?

4. Create an interaction term between average wage and dummy minority. Include it in the

model. How would you interpret the marginal effect of that interaction term.

5. Save the data set, under the name ’Assignment’. Save the do-file and close the log file.

Part 5: Interpret the results

Write a report on your analysis, including your tables, graphs and interpretations from parts

1-4. Divide the report into 4 sections, corresponding to Parts 1-4. The report should be up to

2000 words, without the appendix. In the appendix, copy your do-file and log-file.